

POST DISASTER HOUSING RECONSTRUCTION FRAMEWORK FOR FLOOD
VICTIMS: LOKOJA, KOGI STATE, NIGERIA

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I dedicate this PhD thesis to my family for their uncountable persevering, encouragement, and prayers, despite the hard time they went through, which gave me the strength to withstand the obstacles embedded throughout my academic struggles. I dedicate this thesis to my parents (both living and deceased) for their understanding, encouragement, and prayers to my success, despite their old age. I dedicate it to my friends that contributed immensely to the ideas used in this study. May God bless you all amen. I love you all.



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ABSTRACT

The Nigerians States in 2012 experienced an unprecedented flood in areas of high risk among which Kogi State is the worst hit. In response to the havoc wreaked on the people and built environment by these floods, Kogi State government embark on post-disaster housing reconstruction (PDHR) projects which are supposed to give succor to the beneficiaries and better their lives. However, its failure has been imminent due to inadequate attention given to vital strategies contributing to the effectiveness of reconstruction strategies in Nigeria. Objectives of the study were to investigate the current community involvement in PDHR, identify community perception on PDHR, assess the impacts of the identified vital strategies on PDHR, and propose and validate PDHR framework for flood victims in Lokoja, Nigeria. The study approach was quantitative. Simple random sampling was used to administer structured questionnaires to a total of 400 houses, out of which 257 valid questionnaires constituting 64% from the population of 2012 flood victims at Lokoja metropolis, Nigeria was used in the analysis. The data was analysed using Statistical Package for Social Science (SPSS) version 21 and Partial Least Squares Structural Equation Modelling Software, SmartPLS 3.0. Results showed that community involvement in the housing reconstruction is insignificant especially in risk assessment and flood information gathering (1.94), collaboration with the community (1.80), and the consequence was dissatisfaction with the reconstruction process (1.96), and reconstructed houses (2.18). The models revealed that the identified strategies jointly explained about 26.6% of the variance in effective PDHR. Furthermore, mediation analysis showed that community satisfaction with reconstruction strategies mediated adequately (T-value=2.413 and P-value=0.016; T-value=2.075 and P-value=0.038). Therefore, the study concluded with emphasis on the importance of community involvement in the identified strategies as it will significantly influence beneficiaries' satisfaction and perception on PDHR projects. Moreover, it will add value to the reconstruction process and reconstruction products thereby enhancing the sustainability of the projects and provide a disaster resilient community in Nigeria. Based on that, a PDHR framework for flood victims in Nigeria was proposed and then validated by appropriate stakeholders.

ABSTRAK

Pada tahun 2012, beberapa negeri di Nigeria telah mengalami banjir yang belum pernah berlaku di kawasan-kawasan berisiko tinggi di mana antaranya Kogi adalah negeri yang paling terjejas. Sebagai reaksi tindakan selepas kejadian banjir yang mendatangkan malapetaka kepada penduduk tersebut, projek pembinaan semula perumahan pasca bencana (PDHR) telah dilaksanakan oleh Kerajaan Negeri Kogi. Ini sepatutnya memberikan kehidupan yang lebih baik kepada penduduk tetapi gagal disebabkan kekurangan perhatian yang diberikan kepada strategi-strategi penting yang menyumbang kepada keberkesanan strategi penyusunan semula di Nigeria. Objektif kajian ini adalah untuk menyiasat penglibatan komuniti semasa di PDHR, mengenal pasti persepsi masyarakat terhadap PDHR, menilai kesan strategi penting yang dikenal pasti pada PDHR, dan mencadangkan serta mengesahkan rangka kerja PDHR bagi mangsa banjir di Lokoja, Nigeria. Pendekatan kajian adalah kuantitatif. Persampelan rawak mudah telah digunakan dalam menjalankan soal selidik berstruktur untuk sejumlah 400 unit rumah mangsa banjir 2012 di Lokoja Metropolitan, Nigeria, di mana hanya 257 respons yang boleh digunakan yang membentuk 64% dari jumlah populasi mangsa banjir tersebut telah digunakan dalam analisis. Data yang diperolehi telah dianalisis dengan menggunakan pakej statistik untuk sains sosial (SPSS) versi 21 dan sebahagiannya menggunakan perisian struktur persamaan pemodelan, SmartPLS 3.0. Hasil kajian menunjukkan bahawa penglibatan komuniti dalam pembinaan semula rumah ini tidak ketara terutama dalam penilaian risiko banjir dan pengumpulan maklumat banjir (1.94), kerjasama dengan komuniti (1.80), dan akibatnya adalah ketidakpuasan hati dengan proses pembinaan (1.96), dan dan binaan semula rumah (2.18). Model kajian mendedahkan bahawa strategi-strategi yang telah dikenalpasti bersama-sama menjelaskan kira-kira 26.6% daripada pembolehubah yang berkesan dalam PDHR. Seterusnya, analisis pengantaraan menunjukkan bahawa kepuasan masyarakat dengan penyusunan semula strategi dipenuhi secukupnya (Nilai $T=2.413$ dan Nilai $P=0.016$; Nilai $T=2.075$ dan Nilai $P=0.038$). Oleh itu, kajian ini diakhiri dengan penekanan tentang kepentingan penglibatan masyarakat dalam strategi-strategi yang telah dikenalpasti kerana ia ketara akan mempengaruhi kepuasan benefisiari dan persepsi terhadap projek-projek PDHR. Selain itu, ia akan menambah nilai kepada proses pembinaan semula dan pembinaan semula produk seterusnya meningkatkan kemampanan projek dan menyediakan komuniti yang tahan bencana di Nigeria. Atas dasar itulah, rangka PDHR mangsa banjir di Nigeria telah dicadangkan dan kemudiannya ditentusahkan oleh pihak yang berkepentingan yang bersesuaian.

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LIST OF ABBREVIATIONS

AELG	-	Auckland Engineering Lifelines Group
CBOs	-	Community Based Organisations
CSOs	-	Civil Society Organisations
CRED	-	Centre for Research on the Epidemiology of Disaster
DRR	-	Disaster Risk Reduction
DRUs	-	Disaster Response Units
IFR	-	International Federation of Red Cross
IFRC	-	International Red Cross and Red Crescent Society
INGOs	-	International Non-Government Organisations
IRP	-	International Recovery Platform
LEMA	-	Local Government Emergency Management Agency
MDAs	-	Federal Ministries, Department and Agencies
NEMA	-	National Emergency Management Agency
NGOs	-	Non-Government Organisations
PCFR	-	Presidential Committee on Flood and Rehabilitation
PDHR	-	Post Disaster Housing Reconstruction
PDNA	-	Post Disaster Needs Assessment
SEMA	-	State Emergency Management Agency
SFDRR	-	Sendai Framework for Disaster Risk Reduction
UNDHA	-	United Nations Department of Humanitarian Affairs
UNDP	-	United Nations Development Programme
UNDRO	-	United Nations Disaster Relief Organisation
UN-HABITAT-	-	United Nations Human Settlement Programme
UN-ISDR	-	United Nations International Strategy for Disaster Reduction

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PTTAUTHM
PERPUSTAKAAN TUNKU TUN AMINAH

CHAPTER 1

INTRODUCTION

1.1 Preamble

Natural disaster such as floods are on the increase and regardless of the magnitude or scale, often present substantial challenges to the built environment in the direction of resources and capability (Zahran *et al.*, 2008). Availability of resources for rebuilding projects after a disaster is liable to face problems of demand, supply, cost escalation, and quality. These effects appear in ways that reinforce, worsen, and undermine the reconstruction procedure and outcomes of longer-term community recovery (Tierney & Oliver-Smith, 2012). As such, it is required of the human race to wake up and put appropriate measures in place to minimise or overcome the impending catastrophic. This investigation into post-disaster housing reconstruction practices is essential since it aims at providing a better and safer plan for quicker means of housing reconstruction for flood victims (Ganapati & Ganapati, 2008). Hence, balancing both housing and livelihood recovery in the most appropriate conducts. This study aims at developing effective post-disaster housing reconstruction framework for flood victims by exploring the effects of resource mobilisation, reconstruction approaches and resilience strategies with issues experienced and community satisfaction on the effectiveness of reconstruction strategies as presented in the objectives of this study. This is to ensure the sustainability of post-disaster housing projects in the study area and elsewhere.

1.2 Background to the study

The new Sendai Framework for Disaster Risk Reduction 2015-2030 (SFDRR) proposed in Japan display distinct targets and necessary steps for reducing disaster damage to critical infrastructure and disruption of essential services (Mysiak *et al.*, 2016). The Sendai Framework approaches are group focused or concentrated mainly on priority areas. The Sendai Framework stressed on post-catastrophe reconstruction, which ought to be provided with befitting support of the affected communities or groups. The framework emphatically stressed that satisfactory discussion with the concerned group, strengthening of the affected group, and inclusion or engagement of relevant partners (affected groups) is the key in achieving the requirements of the disaster-stricken communities. However, natural disasters continue to happen around the world, usually impacting negatively on an already deteriorating ecological system (Kim & Choi, 2013). Such disasters also have significant impacts on the built environment, thus threatening the sustainability and the effectiveness of existing and new construction development.

A major visible consequence of most natural disasters, besides a large number of deaths and socio-economic losses, is the widespread devastation of houses (Barenstein & Pittet, 2007), leaving affected communities homeless and contributing significantly to the decline in overall housing provision, thereby causing a substantial increase in housing demand. This establishes a pressing need for a more appropriate and immediate construction sector response (Amaratunga, Malalgoda & Pathirage, 2010). As a result, there is a clear need for more sustainable housing reconstruction, especially considering that housing provision is expected to give succour to affected families in terms of adequate space provision and the continued development of socio-economic status (Niazi & Anand, 2010). Post-disaster housing reconstruction (PDHR) that are well constructed gives confidence and security to the troubled communities, which in turn allows the people to address better their core requirements for providing a livelihood for themselves and their extended families (Niazi & Anand, 2010).

In Nigeria, despite various government investments on housing provision, housing deficit remains intractable (Onibokun, 1990; Salami *et al.*, 2015) especially with the huge setback received from the devastating effects of the 2012 flooding, which emanated from excess run-off and overflow of water reservoirs in both Nigeria and neighbouring Cameroon. According to Aderoju *et al.* (2014), the flood has resulted

in most settlements inundated rendering people in their millions homeless (damaging about 600,000 houses with over 7 million people affected), destroyed thousands of farmlands and livestock including loss of aquatic animals. These sort of damaging occurrences place huge pressures on the government both nationally and locally, due to the severely increasing housing demand (Rotimi *et al.*, 2009). This severe housing shortage could be substantially improved by building the right type of housing and supporting infrastructure in a more sustainable, timely and efficient manner.

Responding to the flood disaster, governments at various levels, the corporate and non-governmental organisation donated funds and relief materials to the victims. The Federal Governments on its part announced a relief fund of ₦17.6 billion (\$110M) to the affected States and some Federal agencies with ₦13.3 billion (\$83.126M) disbursed to states and ₦4.3 billion (\$26.874M) respectively (National Emergency Management Agency, 2012). Besides, the Federal government instituted a Presidential Committee on Flood and Rehabilitation (PCFR) with a part of its mandate being the reconstruction of houses and associated infrastructures to cushion the effects of the flooding (Bilau, Witt & Lill, 2016). However, the efforts to reconstructing houses for the victims have not yielded the desired result. Since survivors in the flood-impacted areas are left confronting the significant challenges of recovering from disaster. Increased complexities and uncertainties in a post-disaster environment mean that delivery of housing is more difficult than it is for conventional projects. As such, the techniques in which housing and resources are gotten may not be able to cope with challenges posed by the major disaster recovery (Masurier, Rotimi & Wilkinson, 2006; Jha *et al.*, 2010).

When examining post-disaster housing reconstruction elsewhere through literature, Shepard (2005) said many Non-government organisations (NGOs), International non-government organisations (INGOs) such as the International Red Cross and Red Crescent Society (IFRC) and the UN agencies such as United Nations Development Programme (UNDP) emphasised on the significance of resource mobilisation. Chang (2012) highlights resource mobilisation as being an essential component in the final efficacy of post-disaster recovery efforts and rated resource mobilisation as one of the contributors to successful post-disaster reconstruction projects that has increasingly drawn attention. Even though these findings have obvious implications for resourcing reconstruction, little interest has been given to a general and systematic analysis of the primary resource vulnerabilities and constraints

inbuilt in a longer-term recovery process. Ade Bilau *et al.* (2018) expressed that the unavailability of local human resources at all stages to facilitate the management of post-disaster housing reconstruction and the sustainability of reconstruction projects is a principal challenge or bottleneck faced by several housing reconstruction projects. As many studies concerned with resource deployment and allotment are mostly targeted at emergency response to meet short-term humanitarian relief needs after a disaster (Thompson *et al.*, 2006; Troy *et al.*, 2008). There is a need for the provision of long term accountability mechanisms for donors and executing partners to ensure the delivery of disaster-resilient housing. This study will attempt to address such a knowledge gap by investigating fundamental strategies for effective post-disaster housing reconstruction projects in the study area.

1.3 Research problem

Flood was described as one of the most significant natural disasters in the world, and its devastating effects are wide-ranging (Diaz, 2004; FitzGerald *et al.*, 2010; Marshall *et al.*, 2013). The report presented by Action Aid (2006), ratifies that flood is one of the central factors barricading Africa's populace from absconding poverty level. Nigeria as the most populated nation in Africa has a long account of seasonal flooding; the situation is becoming more austere in modern times due to the influence of climate change and added related reasons. The flooding that struck between August and October 2012 in Nigeria recorded high impacts on human beings and assets and disordered the customary functioning of many communities (Jinadu, 2015).

However, researchers have contributed their opinions regarding the impacts of flooding and have made recommendations for sustainable reconstruction (Etuonovbe, 2011; Adetunji & Oyeleye, 2013; Kwari, Paul & Shekarau, 2015; Otomofa, Okafor & Obienusi, 2015). Despite the enormous resources being currently assigned for post-disaster recovery and reconstruction, vulnerable communities have not been able to attain back any resilience in both under-developed and developing countries. Lizarralde (2002) revealed that programmes intended for housing and infrastructure reconstruction have been either unsuccessful or have not been impactful since affected communities have not been able to 'bounce-back-better' years after disasters. This ought not to be the case as natural disasters are on the increase and causing devastation

to the physical, economic and psychological aspects of the human race. Effective project organisation and management of the reconstruction process have expressly been identified as vital for successful housing reconstruction and for ensuring that disaster risk reduction measures are incorporated (Johnson, Lizarralde & Davidson, 2006; Johnson, 2007; Ahmed, 2011; Ade Bilau *et al.*, 2018). This means that it is essential to look at the existing frameworks and pattern of community participation; as such perspectives will deepen understanding on the role and nature of recovery in disaster management thereby making disaster-affected communities more resilient.

Another problem cited by scholars is that delay in housing reconstruction after disaster shows incompetence with a lot of opportunity for necessary progress (Roosli & Collins, 2016). This delay may have resulted from ineffective resource mobilisation (Chang, 2012). Studies on support accessible on resource management tend to explain that post-disaster recovery projects are more prone to experience resource shortages (Steinberg, 2007; Kennedy *et al.*, 2008) and supply disorder (Jayasuriya & McCawley, 2008; Zuo *et al.*, 2009). These resourcing troubles can change into final recovery project failures such as cost overruns (Koria, 2009; Chang *et al.*, 2010) and postponed delivery (Nazara & Resosudarmo, 2007; Boen, 2008) in the disaster-affected areas, which can all result to reconstruction delays.

A number of researchers have also complained about the management strategies of the reconstruction projects which indicated poor performance and exploring the efforts to improve the performance of reconstruction projects (Makhanu, 2006; Ofori, 2008; Ahmed, 2008). Bilau, Witt, Lill & Bustani (2016) also complained about the performance of post-flood housing reconstruction programme, the efforts made to enable affected communities to achieve improved disaster resilience with little or no consideration for resource mobilisation strategies and reconstruction approaches that jointly determine the success of reconstruction project. Hence, the need for an investigation on resource mobilisation in post-disaster rebuilding environment for better reconstruction.

The foregoing review indicated that the success of post-disaster recovery and reconstruction processes, practices, and outcomes depend on a number of factors such as the relations between stakeholders (Mukherji, 2008; Davidson, 2010), institutional organisation and arrangements (Inam, 2013) and the ability and participation of local or affected communities (Comerio, 2004; Ahmed, 2011; Ophiyaandri *et al.*, 2013; Sadiqi, Trigunarsyah & Coffey, 2016). However, little attention is given to failure of

previous post-disaster reconstruction and resilient studies to examine the effects of community disengagement on achieving effective reconstruction programme. There are also issues of inadequacy of previous post-disaster reconstruction and resilient frameworks (Bilau, Witt & Lill, 2017; Sadiqi, Trigunarsyah & Coffey, 2017; Roosli & Collins, 2016; Leidner, Pan & Pan, 2009; Cutter *et al.*, 2008; Kovács & Spens, 2007) to incorporate resource mobilisation, resilience measures and post-construction monitoring and evaluation for future prevention in the frameworks.

This becomes obvious, with the level of success and failure reported in post-disaster reconstruction projects all over the world, as resultant effects of the above shortcomings. Among the effects of flooding disaster reported are homelessness, human and animal death and mass population displacements (Audefroy, 2010; Hosseini, de la Fuente & Pons, 2016). Bilau *et al.* (2016) pointed out that as a dedicated agency was available in Japan and India, effective housing reconstruction programmes were achieved. Any new experiences of disaster are used to assess the framework and make an improvement. Contrary to that was witnessed in the 2004 Sri Lanka tsunami due to the absence of a community framework that can coordinate relief and post-disaster reconstruction programme (Bilau *et al.*, 2016). Uyangoda (2005) and Chang *et al.* (2010) cited that issues in reconstruction plans resulted in organisational misunderstanding and eventually, reconstruction delays.

The same is happening in this study area of Lokoja in the Kogi State of Nigeria. Acknowledging the level of damage to houses as presented in the background of this study and seeing housing reconstruction as a key element of post-disaster recovery initiatives in developing countries such as Nigeria, Kogi state government commence the post-flood housing reconstruction in 2013. Two hundred and seventy-two (272) housing units were targeted for the 2012 flood victims; located on higher ground to avert future devastation. According to the schedule, all the houses being constructed in phases were expected to be fully completed and handed over to the flood victims after three (3) months (Bilau *et al.*, 2016). Since then, this delightful intervention is yet to see the light of the day (the project is yet to be completed). The factors responsible for this failure are not different from the ones identified in the literature above (issues in management and resilient strategies, issues in resource mobilisation and reconstruction approaches, and community disengagement).

Hence, the importance of developing an evidence-based decision support framework for practitioners or stakeholders in PDHR that will assist them in adopting

appropriate policies or principles for successful housing reconstruction execution in their post-disaster context is necessary or indispensable. The development of this framework will help policymakers and project managers to manage community available resources to achieve effective projects in post-disaster reconstruction situations. The need becomes imperative as the current “business as usual practices or approaches” in Nigeria is not satisfactorily achieving the primary objective of housing reconstruction after a disaster.

The study is to assess the level of community involvement in resource mobilisation, resilience and reconstruction strategies, issues encountered and community satisfaction with the reconstruction strategies used in PDHR in the study area. The study also evaluates the effectiveness of the PDHR in Lokoja, Nigeria and how the community involvement level influences it.

1.4 Research aim and objectives

The purpose of this research stems from the observation that flood victims in Nigeria require a sustainable post-disaster housing reconstruction framework to survive. The development of this perceived basic guide for flood victims (aim) can be achieved through specific objectives as highlighted in the subsequent sub-sections respectively.

1.4.1 Research aim

Researches about the relation between community involvement and management of post-disaster housing reconstruction phase in the case of Nigeria are missing, creating a gap in the current literature. Hence, this study wants to fill this gap concentrating on the influence and significance of community involvement in the management of the housing reconstruction phase and its articulation in future cases in the Nigerian context. This study aims to evaluate the effects of resilience and reconstruction strategies in terms of community satisfaction and perception on the effectiveness of post-disaster housing reconstruction in Lokoja, Nigeria, with a view to proposing a sustainable community-based framework for flood victims in Nigeria.

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